Shell Center Formative Assessment Lessons Georgia CCGPS Frameworks Alignment

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| **Lesson** | **Title** | **CCSS** | **Description** | **Placement** |
| 01 | Optimization Problem  Boomerangs | A-CED  A-REI | Create equations that describe numbers or relationships.  Solve equations and inequalities in one variable.  Solve systems of equations. | 8  Unit 7  Grade 9  Unit 2 |
| 02 | Distance-Time Graphs | 8.F.5  9.F.IF | Use functions that model relationships  Interpret functions that arise in applications | 8  Unit 6 |
| 03 | Solving Linear Equations in 2 Variables | A-CED  A-REI | Create equations that describe numbers or relationships.  Solve systems of equations. | 9  Unit 2 |
| 04 | Increasing & Decreasing  Quantities by a Percent | A-SSE | Interpret the structure of expressions | 9  Unit 1 |
| 05 | Modeling Situations with Linear Equations | A-SSE  A-CED  A-REI | Interpret the structure of expression.  Create equations that describe numbers or relationships.  Solve equations and inequalities in one variable.  Represent and solve equations and inequalities graphically. | 9  Unit 2 |
| 06 | Evaluating Statements About Length & Area | G-CO | Prove geometric theorems. | 10  Unit 1 |
| 07 | Evaluating Statements About Enlargements | G-GMD | Geometric Measurement and Dimension | 10  Unit 3 |
| 08 | Applying Angle Theorems | G-SRT | Prove theorems involving similarity. | 10  Unit 1 |
| 09 | Table Tiles | F-BF | Build a function that models a relationship between two quantities. | 10  Unit 5 |
| 10 | Calculating Volumes of Compound Objects | G.SRT  G.GMD | Use right triangle ratios to solve problems  Use formulas for volume | 8 or 10  Unit 3 in both |
| 11 |  |  |  |  |
| 12 | Interpreting Statistics  Muddying the Waters | S-ID  S-IC | Summarize, represent, interpret data  Make inferences | 11  Unit 1 |
| 13 | Sorting Equations & Identities | A-SSE  A-REI | Interpret structure of expressions & write equivalent forms; solve equations | 10  Unit 5 |
| 14 | Defining Regions Using Inequalities | A-REI | Represent & solve equations & inequalities graphically | 9  Unit 2 |
| 15 | Estimations & Approximations  The Money Munchers | HNQ | Reason quantitatively and use units to solve problem | 9  Unit 1 |
| 16 | Interpreting Algebraic Expressions | A-SSE  A-APR | Interpret structure of expressions  Rewrite rational expressions | 10  Unit 5 |
| 17 | Modeling: Rolling Cups | F-BF  G-MG  G-SRT | Build a function that models a relationship between two quantities.  Apply geometric concepts in modeling situations.  Prove theorems involving similarity. | 10  Unit 6 |

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| **Lesson** | **Title** | **CCSS** | **Description** | **Placement** |
| 18 | Geometry Problems  Circles & Triangles | G-SRT  G-C | Understand similarity in terms of similarity transformations.  Define trigonometric ratios and solve problems involving right triangles.  Understand and apply theorems about circles. | 10  Unit 3 |
| 19 | Representing and Combining Transformations | G-CO  (8.G.3  8.G.4) | Experiment with transformation in the plane. | 9  Unit 5 |
| 20 | Forming Quadratics | A-SSE  F- IF.4 | Structure to rewrite/equivalent forms  Interpret key features | 10  Unit 5 |
| 21 | Evaluating Statements About Probability | SCP  S-MD | Independence & conditional probabilities  Calculate expected value/evaluate | 10  Unit 7 |
| 22 | Finding equations of Parallel & Perpendicular | G-PE  F-IF | Use coordinates to prove simple geometric theorems algebraically.  Analyze functions using different representations. | 9  Unit 6 |
| 23 | Ferris Wheel | F-BF  F-TF | Build a function that models a relationship between two quantities.  Build new functions from existing functions.  Model periodic phenomena with trigonometric functions. | 11  Unit 6 |
| 24 | Inscribing & Circumscribing Right Triangles | G-CO  G-SRT  G-C | Geometric constructions  Solve problems using right triangles  Apply theorems about circles | 10  Unit 3 |
| 25 | Frequency Plots | S-ID  1, 2 | Summarize, interpret, and represent data on a single count or measurement variable | 9  Unit 4 |
| 26 | Box Plots | S-ID | See above | 9  Unit 4 |
| 27 | Rational & Irrational Numbers 1 | N-RN | Use properties of rational and irrational numbers. | 10  Unit 4 |
| 28 | Analyzing Congruency Proofs | G-CO  G-SRT | (Use before the Applying Angle Theorems) | 10  Unit 1 |
| 29 | Solving Geometric Problems: Floodlights | G-CO  G-SRT | Prove geometric theorems  Prove theorems involving similarity | 10  Unit 1 |
| 30 | Proofs of the Pythagorean Theorem | G-CO  G-SRT | Prove geometric theorems.  Prove theorems about triangles. | 10  Unit 2 (1) |
| 31 | Rational & Irrational Numbers 2 | RN | Use properties of rational and irrational numbers. | 10  Unit 4 |
| 32 | Conditional Probabilities | S-CP  S-MD | Understand independence and conditional probability and use them to interpret data.  Calculate expected values |  |
| 33 | Conditional Probabilities 2 | S-CP, S-MD  F-BF | Understand independence and conditional probability and use them to interpret data.  Calculate expected values and use them to solve problems. Build a function that models a relationship between two quantities. | 10  Unit 7 |

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| **Lesson** | **Title** | **CCSS** | **Description** | **Placement** |
| 34 | Equations of a Circle 1 | G-GPE  A-CED | Expressing geometric properties with equations.  Create equations that describe numbers or relationships | 10  Unit 6 |
| 35 | Equations of a Circle 2 | G-GPE  A-CED  N-RN | Expressing geometric properties with equations.  Create equations that describe numbers or relationships.  Extend the properties of exponents to rational exponents. | 10  Unit 6 |
| 36 | Medical Testing | F-BF  S-CP | Build a function that models a relationship between two quantities.  Understand independence and conditional probability and use them to interpret data.  Use the rules of probability to compute probabilities of compound events in a uniform probability model. | 10  Unit 7 |
| 37 | Comparing Investments | A-SSE  F-LE | Interpret the structure of expressions.  Write expressions in equivalent forms to solve problems.  Construct and compare linear and exponential models and solve problems.  Interpret expressions for functions in terms of the situation they model. | 9  Unit 3 |
| 38 | Sectors of a Circle | A-SSE  G-C | Interpret the structure of expressions.  Find arc lengths & areas of sectors | 10  Unit 3 |
| 39 | Having Kittens | N-Q  F-LE  S-IC | Quantities.  Linear, Quadratic, and Exponential Models  Making inferences and Justifying Conclusions | 9 11  Unit 3 Unit 6 |
| 40 | Manipulating Radicals | N-RN  A-SSE  N-CN | Extend prop. Of exponents to rational #  Operations with complex numbers | 10  Unit 4 |
| 41 | Representing Polynomials | A-SSE  A-APR  F-IF  F-BF | Interpret the structure of expressions  Understand the relationship between zeros and factors of polynomials  Analyze functions using different representations  Build new functions from existing functions | 11  Unit 2 or 6 |
| 42 | Devising a Measure of Correlation | S-ID | Summarize, represent & interpret data on 2 categorical & quantitative variables | 10  Unit 4 |
| 43 | Cutting Corners | A-REI  G-SRT  G-MG | Solve quadratic equations and inequalities in one variable.  Define trigonometric ratios and solve problems involving right triangles.  Apply geometric concepts in modeling situations. | 10  Unit 5 |

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| **Lesson** | **Title** | **CCSS** | **Description** | **Placement** |
| 44 | Creating & Solving Equations | A-REI | Understand solving equations as a process of reasoning & explain | 9  Unit 2 |
| 45 | Manipulating Polynomials | A-APR  A-SSE | Perform arithmetic operations  Interpret the structure of expressions | 11  Unit 2 |
| 46 | Functions and  Everyday Situations | F-IF | Interpret functions in context, analyze multiple representations, compare LE | 11  Unit 6 |
| 47 | 2D Representation of 3D Objects | G-GMD | Visualize relationships between 2D & 3D | 10  Unit 6 ???? |
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| 53 | Estimating: Counting Trees | 7.RP  7.SP | Proportional reasoning  Random sampling | 7  Unit 7 (4) |
| 54 | Estimating Length Using Scientific Notation | 8.EE | (Radicals &) Integer Exponents | 8  Unit 2 |
| 55 | Sports Bag | 7G | Draw, construct geometric figures; Solve angle measures, area, surface area, and volume | 7  Unit 5 |
| 56 | Baseball Jerseys | 7EE | Solves real-life problems using numerical & algebraic equations and expressions | 7  Unit 2, 6, 7 |
| 57 | Making Matchsticks | 8G | Volumes of cylinders, cones, & spheres | 8  Unit 3 |
| 58 | Maximizing Area  Golden Rectangles | 7G | Draw, construct geometric figures; relationships | 7 |
| 59 | Using Positive & Negative #s in Context | 7-NS  7-EE | Apply/extend previous operations w/rational #s. Solve real-life problems |  |
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| 61 | Steps to Solving Equations | 7-EE | Use properties of operations, equivalent expressions, to solve real-life problems | 7  Unit 2 |
| 62 | Lines and Linear Equations | 8EE  8F | Understand proportional relationships  Define, evaluate & compare functions | 8  Unit 5 |
| 63 | Developing a Sense of Scale | 7-RP | Analyze proportional relationships to solve real-world problems | 7  Unit 3 |
| 64 | Repeating Decimals | 8NS  8EE | Know there are #s NOT rational  Analyze & solve linear equations | 8  Unit 2 |

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| 66 | Pythagorean Square Areas | 8G | Understand & apply the Pythagorean Theorem | 8  Unit 3 |
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| 68 | Classifying Solutions to Systems of Equations | 8EE | Analyze & solve linear equations & pairs of simultaneous linear equations | 8  Unit 7 |
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| 70 | Solving Linear Equations in One Variable | 8EE | Expressions & equations | 8  Unit 2 |

Formative Assessment Lessons Aligned by Grade and Unit

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| **Grade** | **Unit** | **Lesson** | **SMP** |
| 7 | 1 | L59: Using Positive & Negative Numbers | 1, 2, 4, 7 |
|  | 2 | L61: Steps to Solving Equations | 1, 4 |
|  | 3 | L63: Developing a Sense of Scale | 2, 8 |
|  | 4 | L53: Estimating – Counting Trees | 1, 3, 4, 5 |
|  | 5 | L55: Sports Bag  L58: Maximizing Area; Golden Rectangles | 1, 3, 4, 6  1, 3, 4 |
|  | 6 | L21: Evaluating Statements About Probability | 2, 3 |
|  | 7 | L56: Baseball Jerseys  L53: Estimating – Counting Trees | 3, 4  1, 3, 4, 5 |
| 8 | 1 | NONE |  |
|  | 2 | L54: Estimating Length using Scientific Notation  L64: Repeating Decimals | 2, 7  1, 2, 6 |
|  | 3 | L66: Pythagorean Square Areas (first half of unit)  L10: Calculating Volumes of Compound Objects | 1, 6, 7, 8  1, 6 |
|  | 4 | L02: Distance-Time Graphs | 2, 3 |
|  | 5 | L62: Lines and Linear Equations | 2, 4, 7 |
|  | 6 | L02: Distance-Time Graphs | 2, 3 |
|  | 7 | L01: Optimization Problems – Boomerangs (or grade 9, unit 2)  L68: Classifying Solutions to Systems of Equations | 1, 2, 3, 4  1, 6 |
| 9 | 1 | L04: Increasing & Decreasing Quantities by a Percent (also middle sch)  L15: Estimations & Approximations – The Money Munchers | 2, 7  1, 2, 3, 4, 6 |
|  | 2 | L01: Optimization Problems – Boomerangs (or end of unit 1)  L70: Solving Linear Equations and Inequalities in One Variable  L05: Modeling Situations with Linear Equations  L44: Creating & Solving Equations  L03: Solving Linear Equations in 2 Variables  L14: Defining Regions Using Inequalities | 1, 2, 3, 4  1, 3  2, 4  7  2, 3  1 |
|  | 3 | L02: Distance-Time Graphs  L37: Comparing Investments  L39: Having Kittens | 2, 3  1, 2, 4, 7  1,2,3,4,5 |
|  | 4 | L25: Frequency Plots  L26: Box Plots  L42: Devising a Measure of Correlation | 1, 2  1, 2  2, 3, 4 |
|  | 5 | L19: Representing & Combining Transformations | 1, 3, 5 |
|  | 6 | L22: Finding Equations of Parallel and Perpendicular Lines | 1, 3, 7 |
| 10 | 1 | (L06: Evaluating Statements About Length & Area)  L28: Analyzing Congruency Proofs (before L08)  L08: Applying Angle Theorems  L29: Solving Geometry Problems: Floodlights | 2, 3  3, 5, 7  3, 7  1, 2, 4, 5, 7 |
|  | 2 | L30: Proofs of the Pythagorean Theorem | 3, 7 |
|  | 3 | L38: Sectors of a Circle  L24: Inscribing and Circumscribing Right Triangles  L18: Geometry Problems – Circle & Triangles (middle of unit 3)  L07: Evaluating Statements About Enlargements  L10: Calculating Volumes of Compound Objects (end of unit; also very good fit in grade 8) | 1, 7  1, 2, 3  1, 2, 3, 6, 7  3, 7  1, 6 |
|  | 4 | L27: Rational & Irrational Numbers - 1  L31: Rational & Irrational Numbers – 2  L40: Manipulating Radicals (Advanced Algebra?)  L41: Representing Polynomials (or grade 11) | 3  3  3, 7  2, 7 |
|  | 5 | L16: Interpreting Algebraic Expressions (early in unit 5)  L43: Cutting Corners (or Unit 6)  L42: Devising a Measure of Correlation  L09: Table Tiles (after F-BF.1.b)  L20: Forming Quadratics  L13: Sorting Equations & Identities | 2, 7  1, 2, 3, 4  2, 3, 4  7, 8  1, 2, 3  3, 7 |
|  | 6 | L34: Equations of Circles – 1  L35: Equations of Circles – 2  L47: 2D Representations of 3D Objects (????)  L17: Modeling: Rolling Cups | 1, 5, 7  1, 7  3, 5, 6, 7  1, 2, 3, 4 |
|  | 7 | L32: Conditional Probabilities – 1: Lucky Dip  L33: Modeling Conditional Probabilities – 2  L36: Medical Testing | 1, 2, 3, 4  1, 2, 4  2, 3 |
| 11 | 1 | L12: Interpreting Statistics – Muddying the Waters | 3, 4 |
|  | 2 | (L41: Representing Polynomials)  L45: Manipulating Polynomials | 2, 7  2, 7, 8 |
|  | 3 |  |  |
|  | 4 |  |  |
|  | 5 |  |  |
|  | 6 | L39: Having Kittens  (L41: Representing Polynomials)  L46: Functions & Everyday Situations  L23: Ferris Wheel | 1, 2, 3, 4, 5  2, 7  1, 2, 4, 5  4, 7 |